

Description

CONTAINER CLOSURE DEVICE AND METHOD

BACKGROUND OF INVENTION

[0001] The invention relates to a container closure device that allows a user to repeatedly open and securely close a container, and a method of securely closing the container. In particular, the present invention is directed to a reusable container closure device that is durable, easy to use, and relatively inexpensive to manufacture. More particularly, the present invention is directed to a container having a first and second flap, said first flap being generally parallel to and at least partially overlaps the second flap when the container is properly closed, at least one first opening extending continuously through said first flap, a corresponding number of second openings extending continuously through the second flap and at least partially aligned with the first opening when the container is properly closed, a corresponding number of first members ro-

tatably disposed of in the first openings and which can be positioned in an "Open" or "Closed" position, a corresponding number of second members attached to the first members, said second member extending continuously through said second opening in said second flap when the first members are in the "Open" position and being non-uniformly shaped in at least one direction so as to serve as a latch to prevent the container from opening when the first members are in the "Closed" position.

[0002] Containers, and particularly corrugated cardboard containers, are well-known in the shipping art. More particularly, many different types of items are shipped in containers, including fragile items, and it is therefore essential that the container remain securely closed or sealed during shipment to eliminate or reduce the likelihood that the contents will prematurely exit the container. Additionally, there have been a variety of different types of carton closures and box fasteners. United States Patent No. 289,161 discloses a retaining strip for securing opposing flaps which are essentially parallel to each other. United States Patent No. 933,454 discloses a slotted connector strip. United States Patent No. 1,076,897 discloses an arrowhead geometry for a box fastener. United States Patent

No. 1,176,457 discloses a fastener which employs two tongues for overlapping alignment with various interfacing edges of the box. United States Patent No. 2,828,905 discloses a fastening means containing hooks on opposed ends and a "T-shaped" key in the middle of the fastener. United States Patent No. 3,019,500 discloses a dual-channel device with inwardly biased opposed ends for fastening flaps of the container. United States Patent No. 3,189,250 discloses a bent single wire rod having a triangular portion configured therein for securing carton flaps between the leg and triangular portions. United States Patent No. 3,545,801 discloses a fastening means having two essentially parallel circular portions which are cylindrically joined in the middle for securing four inwardly folding upper flaps of a container. United States Patent No. 3,624,673 discloses a double-ended, one-piece clothespin which includes a pair of juxtaposed, spaced apart leg members joined by an integrally formed, transverse web at the midpoint of the leg members to provide box closure. United States Patent No. 3,221,977 discloses a pair of rotatable channels for attachment to a carton edge and closing engagement. United States Patent No. 4,218,009 discloses a mechanical interlocking flap ar-

arrangement by which the flaps of a box can be folded together for closing engagement. United States Patent No. 4,761,935 discloses a clip arrangement having one flange being substantially the size of a large central opening in the other flange so that the inner flange has a rest position which extends slightly through the opening of the outer flange so that the clip springs back to this position and exerts a clamping force on the carton flaps. United States Patent No. 4,768,704 discloses a button fastener for use with a storage carton having a stud on one button member which is extended through the side wall of the storage carton. United States Patent 5,035,343 discloses a reclosable container having a non-circular scored portion on the top lid and an opening a resealing device pivotally fastened on the scored portion for selectably separating it from the top lid to provide an aperture, and selectably resealing the aperture by putting the separated portion back into the aperture and rotating it so as to lock it under the inner surface of the top lid. United States Patent No. 5,743,461 discloses a retainer which is slidable in a channel between container flaps and for engagement therewith to hold the flaps in horizontal positions. United States Patent No. 6,230,965 discloses a one-piece closure for a a

container in which a portion of a lower member extends to the front of a flap and serves as a platform for receiving a portion of the lower flap without interference from the upper member, upon the release of the lower flap by a separate flap pull. Finally, United States Patent No. 6,290,126 discloses an "H-shaped" sliding closure which fits in the slot between opposing flaps of a box.

[0003] All of the prior art devices and closure systems are designed for use with a container, particularly a corrugated one, and which permit multiple re-use applications of the same container, thereby eliminating the need for gluing of the flaps of the container or the use of tape to seal the flaps. This has great value with items which are only occasionally used, such as a tool or kitchen appliance, which may be conveniently stored in the container that they were purchased or shipped in, or the container of another item. A conveniently closable container can also be used to transport or store an item in, for example, the trunk of an automobile or the bed of a truck. However, in each of these examples, it is important that the user be able to securely close the container when the item is not in use so as to reduce or eliminate the possibility that the contents will prematurely exit the container.

[0004] Yet one additional common closure means for closing a container, and particularly a corrugated cardboard container has been the use of die-cut tabs. More particularly, die-cut tabs have been used to secure the end flaps of a cardboard container when the flaps of the container are in the closed position. However, these tabs are awkward to use, and are not very durable. More specifically, die-cut tabs tend to deteriorate and will eventually fail, which could in turn lead to the premature opening of the container during shipment and the contents spilling out, which is undesirable.

[0005] Yet still another known alternative to the use of die-cut tabs as a container closure device has been the use of a string attached to the exterior of the container flap. More particularly, once the container flap is placed in the closed position, the string is wrapped around a washer in a clockwise or counterclockwise direction, said washer typically being fixedly attached to the side of the container. However, similar to the die-cut tabs, the string/washer container closure device is not particularly easy to use and tends to deteriorate after repeated use, and will eventually fail. Moreover, containers that cannot be repeatedly opened and securely closed are typically discarded, which

is wasteful and inefficient.

SUMMARY OF INVENTION

[0006] The present invention solves the above-noted problems through the use of a container closure device that permits the container to be repeatedly opened and securely closed, and that is easy to use, relatively inexpensive to manufacture and durable enough to withstand repeated opening and closing.

[0007] Accordingly, it is an object of the present invention to disclose a reclosable and reusable container comprising a first and second flap wherein the first flap at least partially overlaps the second flap when the container is closed, the first flap having at least one first opening extending therethrough and completely disposed within the first flap, the second flap having at least one second opening extending therethrough and completely disposed within the second flap, in conjunction with a closure member which comprises at least one first member insertable into and rotatable within the at least one first opening, the at least one first member having an open position, and at least one second member fixedly attached to the at least one first member and extending through the at least one second opening when the container is closed and the at

least one first member is in the open position.

[0008] It is another object of the present invention to provide an improved container closure device and method for repeatedly opening and securely closing a container, which results in the safe and secure shipment of the container's contents.

[0009] A further objective of the present invention is to provide such an improved container closure device that, because of its ability to be repeatedly opened and securely closed, serves as an efficient and easy to operate storage device.

[0010] Yet another objective of the present invention is to provide such an improved container closure device that is durable, easy to use and relatively inexpensive to manufacture.

[0011] Still another objective of the present invention is to provide such an improved container closure device which eliminates or reduces the problems associated with the container prematurely opening during shipping or storage.

[0012] These objectives and advantages are obtained by the container closure device and method of securely closing a container of the present invention, the general nature of which may be stated as including a container and closure

member which permits reuse of the container in a manner which facilitates the life of the container.

[0013] These and other objects of the present invention will become more readily apparent from a reading of the following detailed description taken in conjunction with the accompanying drawings wherein like reference numerals indicate similar parts, and with further reference to the appended claims.

BRIEF DESCRIPTION OF DRAWINGS

[0014] The invention may take physical form in certain parts and arrangements of parts, a preferred embodiment of which will be described in detail in the specification and illustrated in the accompanying drawings which form a part hereof, and wherein: FIG. 1 is a perspective view of the container closure device of the present invention, showing a container with a first and second flap in a partially opened position, and a pair of second members spaced apart along the bottom of the first flap; FIG. 2 is a perspective view of the container closure device of FIG. 1, showing the container and first and second flaps in the closed position; FIG. 3 is a fragmentary perspective view of the container closure device of FIG. 1, but showing an exploded view of the first and second members; FIG. 3A is

a side view of the first or top member of FIG. 3; FIG. 3B is a side view of the second or bottom member of FIG. 3; FIG. 4 is a fragmentary perspective view of the bottom portion of the second flap of the container closure device of FIG. 1 in the closed position, and showing the pair of second openings and a pair of second members spaced apart along the first flap and protruding through the second flap, one of said pair of second members being positioned in the Closed position and the other of said pair of second members being positioned in the Opened position; and FIG. 5 is an alternative embodiment of a latch.

DETAILED DESCRIPTION

[0015] Referring now to the drawings wherein the showings are for purposes of illustrating the preferred embodiment of the invention only and not for purposes of limiting the same, the Figures show a preferred embodiment of the invention which utilizes at least one closure device which is capable of repeated use with a container. Similar reference numbers refer to similar parts throughout the drawings.

[0016] The objectives of the present invention are achieved in the following manner. A reclosable, reusable container *10* with a closure device *50* of the present invention is shown gen-

erally in FIG. 1. In one embodiment, container 10 with closure device 50 includes a container 11 capable of receiving at least one article for transporting from a first to a second destination or simply for storage of the article, and has first and second overlapping flaps 12, 13 respectively, at least one and preferably two or more closure devices 50 positioned in a corresponding number of first and second openings 16, 17 respectively, optionally with a handle 18. Unless otherwise noted, all components of container 11 are preferably made of a durable cardboard, such as corrugated cardboard. Notwithstanding, it is contemplated that container 11 could also be made of wood, plastic, steel or any other durable material without affecting the overall concept of the present invention.

[0017] In the preferred embodiment of the present invention, best illustrated in FIG. 1, container 11 is generally rectangular in shape and of a type well known in the container art. More particularly, container 11 includes first flap 12, second flap 13, a pair of spaced apart longitudinal side walls 20, 21, a front wall 22 extending between said side walls and essentially perpendicular thereto, a back wall 23 also extending between said side walls and essentially parallel thereto and spaced apart from front wall 22, and a

bottom 24 (not shown).

- [0018] As illustrated in one embodiment shown in FIG. 1, first flap 12 is an extension of back wall 23 and second flap 13 is an extension of front wall 22, extending in the same direction as first flap 12. To properly close container 11, second flap 13 is folded inwardly, i.e., rotated counter-clockwise along fold line 29 and toward the bottom of container 11 until second flap 13 is generally parallel to the bottom of the container. First flap 12 is then folded inwardly, i.e., rotated clockwise along fold line 30 until it at least partially overlaps, and is generally parallel to, second flap 13, as best illustrated in FIG. 2. Notwithstanding, it is contemplated that first and second flaps 12, 13 could alternatively extend from any two of the walls (i.e., side, front or back), without impacting the overall concept of the present invention provided that the flaps extend upwardly in a parallel direction and both flaps are rotated inwardly so as to become generally parallel to each other and at least partially overlap when container 11 is closed.
- [0019] In accordance with one aspect of the present invention, first or overlying flap 12 is formed with at least one, and preferably two or more, first openings 16 for the receipt of a corresponding number of first members 14, as best il-

illustrated in FIG. 3. More particularly, FIG. 3 illustrates a first flap 12 with two spaced apart generally circular first openings 16, and a pair of first members 14 rotatably mounted therein, as indicated by double-ended arrow R in FIG. 2. In particular, first members 14 can be positioned or rotated a full 360° within first openings 16 although in some embodiments of this invention, this degree of rotation may be significantly less, often 90°, although this is not a lower limit to the degree of rotation required, as discussed with reference to FIGS. 3A and 3B below. First flap 12 may optionally contain the markings "Open" and "Closed," adjacent to each of first members 14, to properly indicate two of the positions which first member 14 can occupy, as more fully described below.

[0020] As best illustrated in FIG. 3A, first member 14 is generally circular and further comprises upper retaining ledge 31 and lower portion 32. The diameter of lower portion 32 is slightly smaller than the diameter of first opening 16 to permit the lower portion of first member to be disposed in and to rotate within first opening 16. By contrast, upper retaining ledge 31 has a diameter that is slightly larger than the diameter of first opening 16 and prevents first member 14 from passing completely through first opening

16. Upper portion 31 optionally includes a means for turning or rotating first member 14 in first opening 16, such as a ridge 33, as best illustrated in FIG. 2. First member 14 is preferably formed of a durable material, such as plastic, though it is contemplated that other durable materials could also be used, such as wood or metal, without affecting the overall concept of the invention.

[0021] In the embodiment illustrated in FIG. 3, and after the lower portion 32 of first member 14 has been inserted in first opening 16, a second member 15 is fixedly attached to lower portion 32 of the first member by any suitable means, including such known fastening means such as screws, threaded engagement, glue, etc., so that when first member 14 is rotated within first opening 16, second member 15 will also correspondingly rotate. Second member 15 further comprises a generally circular base 41 and a latch 42 extending outwardly from the bottom of base 41, as best illustrated in FIG. 3B. Base 41 is circular in shape, and has an inside diameter that is slightly larger than the outside diameter of lower portion 32, thereby allowing base 41 to slip over lower portion 32. Second member 15 is preferably formed of a durable material, such as plastic, though it is contemplated that other materials could also

be used, such as wood or metal, without affecting the overall concept of the invention.

[0022] In accordance with yet another important feature of the present invention, second flap 13 comprises a number of second openings 17, which correspond to the number of first openings 16 in first flap 12, and which at least partially align with first openings 16 when container 11 is properly closed. Second opening 17 is complementary shaped and sized to receive second member 15, more specifically latch 42 of second member 15 when container 11 is properly closed and first member 14 is positioned in the "Open" position. It of course is recognized in the art that the relationship of the diameters discussed with regard to base 41 and lower portion 32 could easily be reversed without departing from the general scope of this invention. As mentioned previously, the required degree of rotational movement to effect closure of container 10 is dependent upon the width of latch 42. If this latch occupies approximately one-quarter of the circumference of base 41, then approximately 90° will be required to effect closure. Obviously, the greater the outward extension of the latch as well as the degree of circumference coverage, the stronger the closure, although it is recognized that

this degree of strength required is dependent upon the end-use application.

[0023] In the preferred embodiment of the present invention, container *11* further comprises optional handle *18*. Handle *18* is preferably C-shaped and can be fixedly attached to second flap *13* by any suitable means, such as by inserting the ends of the handle into perforations in second flap *13*, as better illustrated in FIG. 4. First flap *12* further comprises a handle opening *19* which extends continuously through and is positioned along first flap *12* to accommodate handle *18*. When container *11* is closed, handle *18* extends far enough beyond the top surface of first flap *12* to allow a user to grip the handle, as best illustrated in FIG. 2. In one embodiment, handle *18* has a pair of downwardly extending legs *27* and at least one, preferably two arrow-shaped extensions *26* pivotable about fold lines *28*. In yet another embodiment, handle *18* is inserted through a pair of apertures dimensioned to accommodate legs *27* when the arrow-shaped extensions are folded. These apertures *25*, shown only in lid *13*, could equally be used in place of handle opening *19* in overlaying flap *12* thereby resulting in a structure with apertures in both flap *12* as well as lid *13*. Notwithstanding the forgoing, other types of handles,

such as apertures *26* in the side walls *20, 21* of container *11* are also contemplated and would not affect the overall concept of the invention that being to provide an improved container closure device that is easy to use, relatively inexpensive to manufacture and which is capable of being repeatedly opened and securely closed without premature failure.

[0024] Having described the improved container closure device *10* of the present invention, the method for properly closing the container closure device will now be described in detail. Following the placement of the contents to be stored or shipped into container *11*, second flap *13* is folded inward toward the bottom *24* of container *11*. More particularly, second flap *13* is folded (rotated counter-clockwise) inwardly until it is approximately perpendicular to front wall *22*. The user then rotates or positions each of first members *14* into the "Open" position, the "Open" position being written or designated on top of first flap *12*, as described above.

[0025] Once each of the first members *14* are in the "Open" position, first flap *12* is folded inward toward second flap *13* until first and second flaps are approximately parallel to each other and make contact. As first flap *12* is being

folded onto second flap 13 with first member 14 in the "Open" position, a portion of second member 15 and, in particular, latch 42, will extend through second opening 17 in second flap 13. Once first flap 12 makes contact with and is approximately parallel to second flap 13, the user then rotates or positions first members 14 into the "Closed" position, as written or designated on top of first flap 12, which simultaneously rotates or positions latch 42 into the closed position, as best illustrated in FIG. 4. More particularly, FIG. 4 illustrates the left latch in the "Closed" position, latched against the bottom of second flap 13, which prevents a user from opening first flap 12.

[0026] Once each of the first members 14, and the corresponding second members 15 are in the "Closed" position, container 11 is securely closed and ready for storage or shipment. Moreover, a user desiring to open container 11 need only rotate or position first members 14 into the "Open" position, as designated on top of first flap 12, lift first flap 12 and lift second flap 13 and container 11 is open. Additionally, because container 11 is comprised of durable parts as described above, container 11 can be repeatedly opened and securely closed without deteriorating the improved container closure device of the present invention.

[0027] Thus, it can be seen that the present invention reduces or eliminates the possibility that the contents of the container will prematurely exit reclosable container *11* during shipment or storage. Additionally, improved container closure device *10* also reduces or eliminates the problems associated with the container closure devices of the prior art including, but not limited to, premature failure.

[0028] Though the present invention is intended for use with corrugated shipping containers, it is contemplated that the improved container closure device and method of the present invention could also be used on just about any type of container including, but not limited to wooden, metal or plastic containers of virtually any shape or size. More specifically, and without limitation, it is also contemplated that improved container closure device *10* can be used on containers that are rectangular, square, cylindrical, circular, triangular, or some other geometric shape, it being understood that the flaps would be complementary shaped to each other to permit the flaps to essentially overlap from opposed directions and have the at least one closure device *50* disposed entirely within one or both of the overlapping flaps.

[0029] It is also contemplated that the first and second members

of the present invention could be slidably mounted, as opposed to rotatably mounted, within first opening *16* without affecting the overall concept of the invention provided that second member *15* is capable of extending through second opening *17* and serving as a latch that, when engaged, will prevent first and second flaps *12, 13* from opening. Moreover, the present invention contemplates that the first and second members *14, 15*, and the respective functions that they perform, could be combined to form one member which could be rotatably or slidably mounted into first opening *16* and capable of latching onto the bottom side of second flap *13* through second opening *17* to prevent container *11* from opening when container *11* is properly closed and first member *14* is in the "Closed" position.

[0030] It is further contemplated that in a manner described in the preceding paragraph, the first *14* and second *15* members of the invention are slidably mounted via a gear drive as illustrated in FIG. 5 illustrating a slidable latch *42a* having a plurality of teeth *46* disposed internally for mating engagement with meshing gears *44*. In operation, rotational movement of ridge *33* positioned about a periphery of the lower portion *32* of first member *14* will effect "in"

and "out" sliding movement of latch *42a*.

[0031] Accordingly, the improved container closure device and method of the present invention is simplified, provides an effective, safe, inexpensive and efficient device and method which achieves all the enumerated objectives, provides for eliminating or reducing the difficulties encountered with previous container closure devices, provides a method for repeatedly opening and securely closing a container, and solves problems and obtains new results in the art.

[0032] In the foregoing description, certain terms have been used for brevity, clearness and understanding; but no unnecessary limitations are to be implied therefrom beyond the requirements of the prior art, because such terms are used for descriptive purposes and are intended to be broadly construed. Moreover, the description and illustration of the invention is by way of example, and the scope of the invention is not limited to the exact details shown or described.

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[0034] This invention has been described in detail with reference

to specific embodiments thereof, including the respective best modes for carrying out each embodiment. It shall be understood that these illustrations are by way of example and not by way of limitation.